

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

0 272 001

A2

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number: 87310111.7

(51) Int. Cl. 4: A63B 57/00

(22) Date of filing: 16.11.87

(30) Priority: 17.11.86 US 931140  
17.08.87 US 88017

(43) Date of publication of application:  
22.06.88 Bulletin 88/25

(84) Designated Contracting States:  
CH DE ES FR GB IT LI SE

(71) Applicant: Ferro, Ernest  
6 Zabriskie Terrace  
Monsey New York 10962(US)

Applicant: Ferro, Robert  
365 Brieger Road  
Hauppauge New York 11788(US)

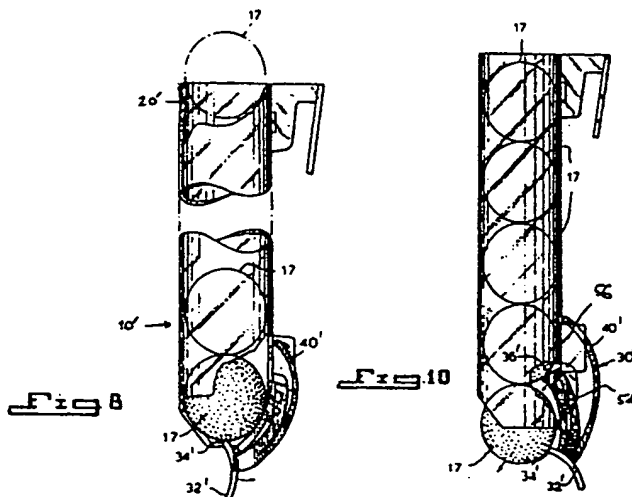
(72) Inventor: Ferro, Ernest  
6 Zabriskie Terrace  
Monsey New York 10962(US)  
Inventor: Ferro, Robert  
365 Brieger Road  
Hauppauge New York 11788(US)

(74) Representative: Gordon, Michael Vincent et al  
GILL JENNINGS & EVERY 53-64 Chancery  
Lane  
London WC2A 1HN(GB)

(54) Ball dispensers, particularly combined golf ball and tee dispensers.

(57) A dispenser (10') for dispensing golf balls (17) comprises a first open-ended elongate tube (12'), and a releasable barrier (30') which includes a pivotally mounted lever having a finger-operable portion (32'), a ball support portion (34') and a transient ball resting portion (36') located generally above the ball support portion. The lever is pivotable by operation of the finger-operable portion (32'), against the action of a restoring force (40'), away from a rest position (Figure 8) in which the ball support portion (34') adopts a position for supporting the lowermost ball (17) in the first tube (12') whilst permitting positioning, touch and inspection of the lowermost ball through cut away part (18'), to an actuated position (Figure 10) in which the ball support portion (34') no longer blocks escape of the lowermost ball (17) whilst the transient ball resting portion (36') temporarily blocks escape of a ball next above the lowermost ball by protruding into the first tube (12'). The restoring force (40') can be provided by a resiliently deformable portion of an integrally formed lever, or by a spring separate from the lever. A golf

tee dispenser is preferably connected to the golf ball dispenser for use in conjunction therewith.



EP 0 272 001 A2

## BALL DISPENSERS, PARTICULARLY COMBINED GOLF BALL AND TEE DISPENSERS

The present invention relates to ball dispensers, particularly combined golf ball and tee dispensers.

There are in the prior art various golf ball or tee holders in which a plurality of balls or tees are held and are made available to the golfer during a round of golf. For example, U.S. patent no: 3,281,031 discloses that a plurality of golf balls can be fed into the top end of a tube. The lowermost ball abuts a gate, which in turn is connected to a dispensing handle. When the dispensing handle is actuated, the gate opens, thereby allowing the ball to fall out of the tube. However, none of the prior art devices fulfills a long felt need for a golfer to position, touch and/or inspect the lowermost ball by means of his or her thumb or finger, and then release the ball with that very same thumb or finger.

This long felt need is derived from the fact that many sportsmen rely on superstitious "routines" before engaging in a competitive act of sport, in the belief that it will enhance their performance. The ability to touch or position the ball during a round of golf with the thumb or finger of one hand, while leaving his other hand free, and then being able to release the ball with the same thumb or finger, provides the superstitious golfer with an enormous psychological benefit by placing his or her mind at ease. Thus, it may actually also enable him to play a better round of golf. The ability to touch and position the lowermost ball also provides a benefit for the non-superstitious golfer. It allows such a golfer to examine the ball for surface imperfections by rotating the lowermost ball inside the tube.

According to the present invention a dispenser for dispensing balls, such as golf balls, comprises a first open-ended elongate tube for receiving the balls to be stacked therein and a releasable barrier for allowing escape of the balls from the tube;

characterised in that the releasable barrier includes a pivotally mounted lever having a finger-operable portion, a ball support portion and a transient ball resting portion located generally above the ball support portion, the lever being pivotable by operation of the finger-operable portion, against the action of a restoring force, away from a rest position in which the ball support portion adopts a position for supporting the lowermost ball in the first tube whilst permitting positioning, touch and inspection of the lowermost ball, to an actuated position in which the ball support portion no longer blocks escape of the lowermost ball whilst the transient ball resting portion temporarily blocks escape of a ball next above the lowermost ball by

protruding into the first tube;

the restoring force causing the lever to return from the actuated position to the rest position when the finger-operable portion is no longer operated whereby, due to the action of gravity, the ball previously next above the now released and erstwhile lowermost ball falls onto the ball support portion and becomes a new lowermost ball.

The restoring force could be provided by a spring separate from the lever, the spring being for example a coiled spring whose two ends could press respectively against the first tube and the lever. Alternatively, the restoring force could be provided by a resiliently deformable portion of the lever, the resiliently deformable portion being for example an elongate leg whose single free end could press against just the first tube. In the latter case, it would be possible for the finger-operable portion, the ball support portion, the transient ball resting portion and the resiliently deformable portion to be formed integrally with one another. In both cases, the lever could be pivotally mounted to a holder provided near the lower end of the first tube such that, in the actuated position of the lever, the transient ball resting portion protrudes through a slot provided near the lower end of the first tube.

Preferably, the dispenser is for dispensing golf balls and is in combination with a dispenser for dispensing golf tees comprising a second open-ended elongate tube for storing a plurality of generally conically headed tees stacked on top of one another, the tees being removable individually from the lower end of the second tube.

In one embodiment, the lower end of the second tube is provided with at least one, and preferably a pair, of inwardly directed resiliently deformable tongues which support a wide head portion of the lowermost tee. The tongues can be formed by slotting the second tube. In another embodiment, the second tube is formed near its upper and lower ends with first and second respective pairs of transversely extending slots;

a first tension spring having an expandable inner circumference being mounted in said first pair of slots for allowing a pointed lower portion of each tee therethrough in one direction, said inner spring circumference expanding around a wide head portion of each tee being passed therethrough, and resuming a normal position upon said wide head portion having passed therethrough, but when in said normal position preventing a movement of said wide head portion therethrough in a direction opposite to said one direction; and

a second tension spring having an expandable inner circumference being mounted in said second

pair of slots for allowing the pointed lower portion of the lowermost tee therethrough but abutting the wide head portion of the lowermost tee in a rest position of said lowermost tee, a downwards force exerted on said lowermost tee expanding said inner spring circumference and permitting said lowermost tee to be pulled out, whereby due to gravity action, an erstwhile next to the lowermost tee becomes the new lowermost tee. In both embodiments, the second tube may be connected to the first tube, by means of for example at least one cross member.

It is possible for the upper end of the first tube to be provided with at least one, and preferably a pair, of inwardly directed resiliently deformable tongues which allow a ball to be pushed into the first tube, but which resist inadvertent escape of a ball from the upper end of the first tube. The tongues can be formed by slotting the first tube. It is alternatively possible, however, for a hinged member to be provided near the upper end of the first tube, a portion of the hinged member being located partially within said first tube's interior, and partially outside said first tube, and a resilient spring connected to the hinged member urging the hinged member in a rest state thereof to adopt a position partially obstructing the first tube's upper end to prevent balls already disposed within the first tube from exiting in an upwards direction, but upon a ball attempting to enter the first tube, the entering ball forces the hinged member against the action of the resilient spring to adopt another position in which the entering ball can move past the hinged member.

Preferably, at least one clamping hook is secured to the first tube for allowing the first tube to be secured to a golf bag.

It will thus be appreciated that a particularly preferred dispenser, according to the present invention, permits the dispensing of both golf balls and golf tees in a single device. It provides the first elongate open-ended tube for inserting, stacking and later dispensing golf balls, and the second elongate open-ended tube connected to the first tube for inserting, stacking and later dispensing golf tees. For proper operation, the combined dispenser should be placed in a substantially vertical position.

Provided near the top end of the first tube is the hinged member. The resilient spring urges the hinged member during its rest state to partially obstruct the top end of the first tube. When the golfer inserts a ball into the open top end of the first tube, the entering ball is pushed past the hinged member, thereby for example compressing the resilient spring and permitting the ball to enter the first tube. Additional balls can be inserted into the first tube in an identical manner. After a ball

has passed the hinged member, the resilient spring urges the hinged member into its rest position, thus again partially obstructing the top open end. This prevents balls already inside the first tube from exiting from the top end of the first tube, thereby preventing any accidental spillage. The balls that have already entered the first tube naturally gravitate to the bottom of the first tube.

Located at the lower open end of the first tube is the finger-operable dispenser. When the golfer needs a ball, the lowermost golf ball is dispensed by the golfer operating the finger-operable dispenser. The golfer may activate the finger-operable dispenser with the thumb or any finger of one hand thereby leaving the other hand free.

The finger-operable dispenser further provides for a partial exposure of the lowermost ball in the first tube. This permits any superstitious or nervous golfer to position or touch the lowermost ball prior to engaging in a golf swing. For the non-superstitious golfer, the ability to touch and position the lowermost ball enables the golfer to inspect that ball for any surface imperfections.

A feature provided by the present invention is that the finger-operable dispenser activation requires only one hand. Thus the golfer may, with his other hand, perform other tasks, such as pulling a golf club from his or her golf bag, or allowing the free hand to rest.

The second elongate open-ended tube defines an axis and can stack and dispense golf tees. The first (generally circularly shaped) tension spring is mounted transversely to the axis defined by the second tube in a first mount located near the top end of the second tube. To insert tees into the second tube, the golfer inserts the pointed end of a generally conically headed tee through the inner circumference of the first spring. With a continuous push to force the tee through the first spring, the inner circumference of the first spring expands around the wide head portion of the tee, allowing the tee to pass therethrough and into the second tube. Once inside the second tube, the tee gravitates downwardly within the second tube.

Because the inner circumference of the first spring is too small to first accept the wide head portion of a tee, the first spring will prevent the tees from exiting out from the top end of the second tube, thus preventing any accidental spillage.

By repeating the above-described insertion motion, the golfer may fill the second tube with tees, wherein the tees are stacked one on top of the other within the second tube.

The second (generally circular) tension spring is mounted transversely to the axis of the second tube within a second mount located near the bottom of the second tube. The pointed lower portion

of the lowermost tee extend through the inner circumference of the second spring and out of the second tube's lower open end. The inner circumference of the second spring abuts the wide head portion of the tee, thus preventing it from exiting out of the bottom end of the second tube. When the golfer needs a tee, he pulls the lowermost tee out of the second tube. This causes the inner circumference of the second spring to expand around the tee's head, and thus permits the tee to pass out of the second tube.

Two dispensers in accordance with the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a front elevation view of a combined ball and tee dispenser, with the top hinge and the finger-operable dispenser in their rest positions;

Figure 2 is a detail of Figure 1, with the top hinge in its downward (spring compressed) position;

Figure 3 is a detail of Figure 1 with the finger-operated dispenser in its actuated position;

Figure 4 is a side elevation view corresponding to Figure 1;

Figure 5 is a top plan view of the tee inlet portion of the tee dispenser, including a circular spring;

Figure 6 is a large scale view of the tee inlet portion of Figure 5, with the circular spring removed for the sake of clarity;

Figure 7 is a perspective view of an alternative embodiment of the combined ball and tee dispenser, with the dispenser in its rest position and the first tube partly broken away;

Figure 8 is a front sectional view corresponding to Figure 7;

Figure 9 corresponds to the view of Figure 8, with the dispenser fully actuated;

Figure 10 corresponds to Figure 8, with the dispenser in a half-way position between its rest and actuated positions;

Figure 11 is a side view of the alternative embodiment; and

Figure 12 is a fragmentary perspective view of the alternative embodiment.

A golf ball dispenser 10 of the present invention is intended for use during actual golf play. As shown in Figure 1, it includes a first elongate tube 12 with a top open end 14 and a bottom open end 16. The inner diameter of the tube 12 is slightly larger than that of a golf ball 17 so as to permit easy insertion and longitudinal movement of the balls 17 within the tube 12, but to prevent any significant transverse movements of the balls 17 within the tube 12. The length of the tube 12 should be such as to accommodate the number of

balls required to play a round of golf, for example five to eight balls.

The method for inserting golf balls into the first tube 12 will now be described. Provided near the vicinity of the upper open end 14 of tube 12 is a member 20 hingeably attached to the tube 12, and partially protruding through a slot 22 formed in the tube 12 into the tube's interior. Member 20 is thus located partially outside the tube 12 and partially within the tube 12. In a rest state position, a resilient spring 24 urges the member 20 to partially obstruct the top end of the first tube, as illustrated in Figure 1. The resilient spring 24 could be a coiled spring, as shown in Figure 4, whose two ends press respectively against the hinged member 20 and a mount on the first tube 12 for mounting the hinged member 20.

To insert balls 17 into the tube 12, the golfer simply introduces a ball into top open end 14, and pushes it past the member 20. With sufficient pressure, the resilient spring 24 will be compressed, and member 20 will fold away into a second position as illustrated in Figure 2, thereby substantially opening top end 14 and allowing balls 17 to enter the tube 12. Once inside the tube 12, the balls will gravitate downwardly towards the bottom end 16. After a ball 17 has passed the member 20, the resilient spring 24 will urge the member 20 back into its normal rest position as shown in Figure 1. This will prevent any balls previously disposed within the tube 12 from exiting from top end 14 of the tube 12, thus preventing any accidental spillage.

The operation of the releasable barrier or ball dispenser, as shown in Figure 1, will now be described. Located at the bottom end of tube 12 is a finger-operable or thumb-operable dispenser 30 for dispensing the balls 17 from the tube 12. Finger dispenser 30 includes a spring loaded lever pivotally mounted on a holder 38 secured to the tube 12. The lever is a single rigid member having a finger-operable extension portion 32 for easy access by the golfer's fingers or thumb, a lowermost ball support portion 34, and a transient ball resting portion 36 protruding into the tube 12 through a slot 42 formed in the tube 12. The lever has two positions: a normal resting state and a dispensing state.

A spring 40 urges dispenser 30 to assume its normal resting position as shown in Figure 1. In such a position, the ball support portion 34 prevents balls 17 from exiting from the lower end 16 of the tube 12 by partially blocking the lower end 16. Simultaneously, the transient ball resting portion 36 can rest upon the lowermost ball 17, holding it in a substantially stable position.

When the golfer needs an additional ball, he pushes with his finger or thumb the finger-operable

extension portion 32 of dispenser 30 into the dispensing position as shown in Figure 3. During such a movement, the ball support portion 34 is prevented from further supporting the lowermost ball 17. Thus, the lowermost ball is now free to fall downwardly and out of the lower tube end 16. Simultaneously, the transient ball resting portion 36 protruding into tube 12 through slot 42 is shifted to temporarily abut the bottom of the second lowermost ball 17. This prevents the second lowermost ball 17 from also exiting out of lower end 16 of tube 12 simultaneously with the lowermost ball 17.

After the golfer receives the erstwhile lowermost ball, now outside the tube 12, he releases the finger-operable dispenser 30. The spring 40 then urges the dispenser 30 and its ball support portion 34, finger-operable portion 32 and transient ball resting portion 36 to resume its normal vertical position. Thus, the erstwhile second lowermost ball, due to the action of gravity falls downwardly, and becomes in turn the lowermost ball.

The dispenser 10, according to the present invention, provides partial exposure of the lowermost ball, even while the finger-operated dispenser 30 is in its normal rest position. As illustrated in Figure 1, cut away portion 18 of tube 12 permits the golfer to touch, position and inspect the lowermost ball with his or her thumb or finger. The golfer can also release the lowermost ball 17 with his or her thumb or finger, thus leaving his other hand free.

Clamping hooks 50 and 52 fastened to the first tube 12 permit the ball dispenser 10 to be hung from or otherwise connected to a golf bag, golf cart or even the golfer's belt.

The ball dispenser 10 is further equipped with a second tube 60 for the holding and dispensing of golf tees 75. The structure of the tube 60 and the method for inserting golf tees 75 and later dispensing them from the tube 60 will now be described. Referral to Figures 4 to 6 will aid in understanding this portion of the invention.

The tee holder and dispenser 60 is a second elongate open-ended tube with a top end 70 and a bottom end 72. The inner diameter of the second tube 60 is slightly larger than that of the wide head portion of a golf tee 75, so as to permit easy insertion and vertical movement of the tees 75 within the second tube 60, but so as to prevent any significant transverse movements within the second tube 60. The length of tube 60 should be long enough to accommodate the number of tees required to play a round of golf, for example five to eight tees.

The second tube 60 defines an axis which is normally positioned to be upright. Near the top end 70 of the second tube 60 is a first pair of slots 62 formed transversely to the axis of the tube 60. A

first originally circularly shaped tension spring 64 is mounted on the first pair of slots 62 and can thereby be caused to adopt a somewhat oval shape. Near the bottom end 72 of the second tube 60 there is located a second pair of slots 66 also formed transversely to the axis of the tube 60. A second originally circularly shaped tension spring 68 is similarly mounted in the second pair of slots 66. Both tension springs 64 and 68, in their rest state, have inner circumferences which are just wide enough to accept therethrough the pointed lower portion of a tee, but too narrow to first accept the wide head portion of a golf tee.

To insert a tee 75 into the second tube 60, the golfer must insert the pointed portion of a tee 75 through the inner circumference of the first spring 64 located near the open top end 70 of the tube 60. As the golfer continues to push the tee inside the second tube 60, the inner circumference of spring 64 expands around the wide head portion of the tee 75, and thus allows the tee to pass therethrough. After the tee has completely passed spring 64, and is fully inside the tube 60, the spring 64 resumes its normal position. Thus, tees cannot exit through the top end 70 of the tube 60, thereby preventing any accidental spillage.

Once inside the tube 60, the tees 75, due to the action of gravity, move in a downwardly direction and are stacked one on top of the other inside tube 60. In a normal rest state, the pointed portion of the lowermost tee extends through the inner circumference of the second spring 68 located near the lower end 72 of the tube 60 and protrudes outside the tube 60. The inner circumference of the second spring 68 abuts the wide head portion of the lowermost tee, thereby preventing it from falling out from the lower end 72 of tube 60.

To dispense the lowermost tee, the golfer grasps the pointed portion of the lowermost tee extending outside tube 60 and pulls it downwardly. This downward force causes the inner circumference of spring 68 to expand, thereby permitting the wide head portion of the downwardly moving lowermost tee to pass through spring 68 and out of the tube 60. Due to gravity, the erstwhile next to the lowermost tee becomes then the lowermost tee.

As shown in Figures 1 and 4, cross members 80 and 82 connect ball tube 12 and tee tube 60 to one another.

A second dispenser 10', according to the present invention, is shown in the remaining Figures 7 to 12. The construction and manner of operation of the second dispenser 10' are generally similar to those of the dispenser 10 and therefore the same reference members will be used for corresponding features but with the addition of a prime. Thus, for example, the clamping hooks 50 and 52 are replaced by a handle-like hook 50'. The

second tube 60' does not have springs 64 and 68 but instead has resiliently deflectable tongues 68' at just its lower end. The first tube 12' has a pair of resiliently deflectable tongues 20' at its upper end. The major differences between the dispensers 10 and 10' appear in their finger-operable dispensers 30 and 30'.

In the dispenser 10', which is preferred to the dispenser 10, the spring 40 is replaced by a resilient portion 40' formed integrally with the remainder of the lever. The lever can thus be moulded or stamped from a single solid member as shown. The arcuate portion at the lower end of dispenser 30' is formed to provide both the lowermost ball support portion 34' and the finger-operable extension portion 32'. The transient ball resting portion 36' is formed adjacent to an axle 54 where the dispenser 30' is pivotally mounted on the holder 38' and secured to the tube 12'. The resilient portion 40' is positioned with its free end resting against tube 12' so that the resilient portion 40' urges the dispenser 30' to assume the normal resting position. When a golfer presses extension portion 32' in order to obtain the lowermost ball, the resilient portion 40' is flexed which causes dispenser 30' to return to its resting position after the extension portion 32' is released by the golfer. The free end of the resilient portion 40' can be guided between a pair of abutments 56 on the first tube 12'. The cut-away portion 18' is particularly clearly shown in Figure 7.

## Claims

1. A dispenser (10;10') for dispensing balls, such as golf balls (17), comprising a first open-ended elongate tube (12;12') for receiving the balls to be stacked therein and a releasable barrier (30;30') for allowing escape of the balls from the tube;

characterised in that the releasable barrier includes a pivotally mounted lever having a finger-operable portion (32;32'), a ball support portion (34;34') and a transient ball resting portion (36;36') located generally above the ball support portion, the lever being pivotable by operation of the finger-operable portion (32;32'), against the action of a restoring force (40;40'), away from a rest position in which the ball support portion (34;34') adopts a position for supporting the lowermost ball (17) in the first tube (12;12') whilst permitting positioning, touch and inspection of the lowermost ball, to an actuated position in which the ball support portion (34;34') no longer blocks escape of the lowermost ball (17) whilst the transient ball resting portion (36;36') temporarily blocks escape of a ball next above the lowermost ball by protruding into the first

tube (12;12');

the restoring force (40;40') causing the lever to return from the actuated position to the rest position when the finger-operable portion (32;32') is no longer operated whereby, due to the action of gravity, the ball previously next above the now released and erstwhile lowermost ball falls onto the ball support portion (34;34') and becomes a new lowermost ball.

2. A dispenser according to claim 1, characterised in that the restoring force is provided by a spring (40) separate from the lever.

3. A dispenser according to claim 1, characterised in that the restoring force is provided by a resiliently deformable portion (40') of the lever.

4. A dispenser according to claim 3, characterised in that the finger-operable portion (32'), the ball support portion (34'), the transient ball resting portion (36') and the resiliently deformable portion (40') are formed integrally with one another.

5. A dispenser according to any preceding claim, characterised by being in combination with a dispenser for dispensing golf tees (75) comprising a second open-ended elongate tube (60;60') for storing a plurality of generally conically headed tees stacked on top of one another, the tees being removable individually from the lower end of the second tube.

6. A dispenser according to claim 5, characterised in that the second tube (60) is formed near its upper (70) and lower (72) ends with first (62) and second (66) respective pairs of transversely extending slots;

a first tension spring (64) having an expandable inner circumference being mounted in said first pair of slots (62) for allowing a pointed lower portion of each tee therethrough in one direction, said inner spring circumference expanding around a wide head portion of each tee being passed therethrough, and resuming a normal position upon said wide head portion having passed therethrough, but when in said normal position preventing a movement of said wide head portion therethrough in a direction opposite to said one direction; and

a second tension spring (68) having an expandable inner circumference being mounted in said second pair of slots (66) for allowing the pointed lower portion of the lowermost tee therethrough but abutting the wide head portion of the lowermost tee in a rest position of said lowermost tee, a downwards force exerted on said lowermost tee expanding said inner spring circumference and permitting said lowermost tee to be pulled out, whereby due to gravity action, an erstwhile next to the lowermost tee becomes the new lowermost tee.

7. A dispenser according to claim 5 or claim 6, characterised in that the second tube (60;60') is connected to the first tube (12;12').

8. A dispenser according to claim 7, characterised in that the connection of the second tube (60) to the first tube (12) includes at least one cross member (80,82).

9. A dispenser according to any preceding claim, characterised in that a hinged member (20) is provided near the upper end (14) of the first tube (12), a portion of the hinged member (20) being located partially within said first tube's interior, and partially outside said first tube, and a resilient spring (24) connected to the hinged member urging the hinged member in a rest state thereof to adopt a position partially obstructing the first tube's upper end to prevent balls already disposed within the first tube (12) from exiting in an upwards direction, but upon a ball attempting to enter the first tube, the entering ball forces the hinged member (20) against the action of the resilient spring (24) to adopt another position in which the entering ball can move past the hinged member.

10. A dispenser according to any preceding claim, characterised in that at least one clamping hook (50,52;50') is secured to the first tube (12;12') for allowing the first tube (12;12') to be secured to a golf bag.

5

10

15

20

25

30

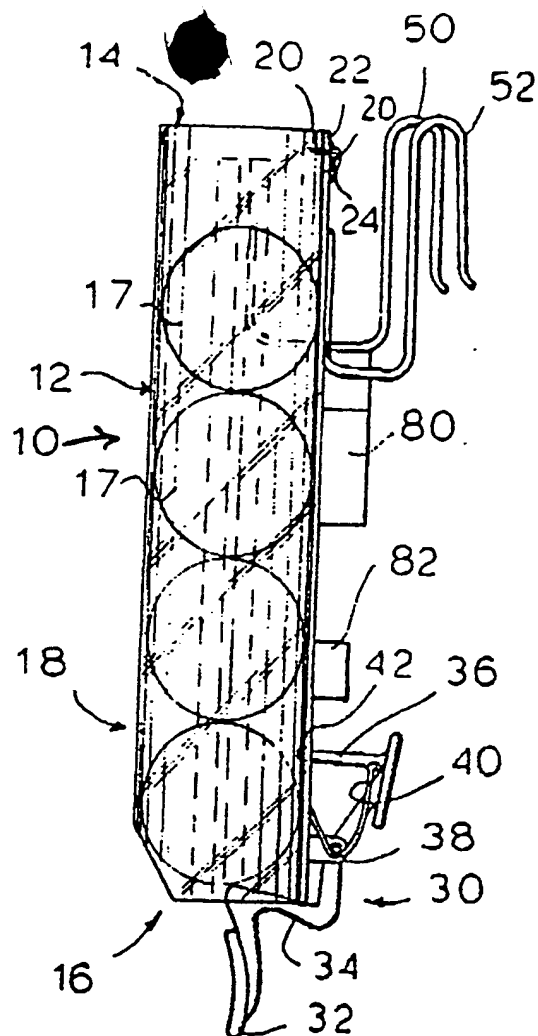
35

40

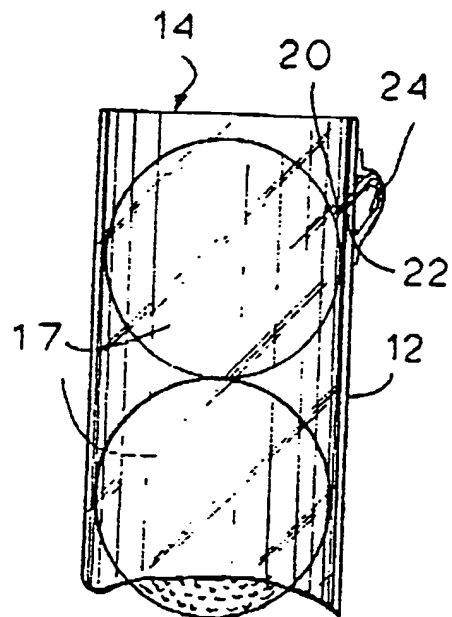
45

50

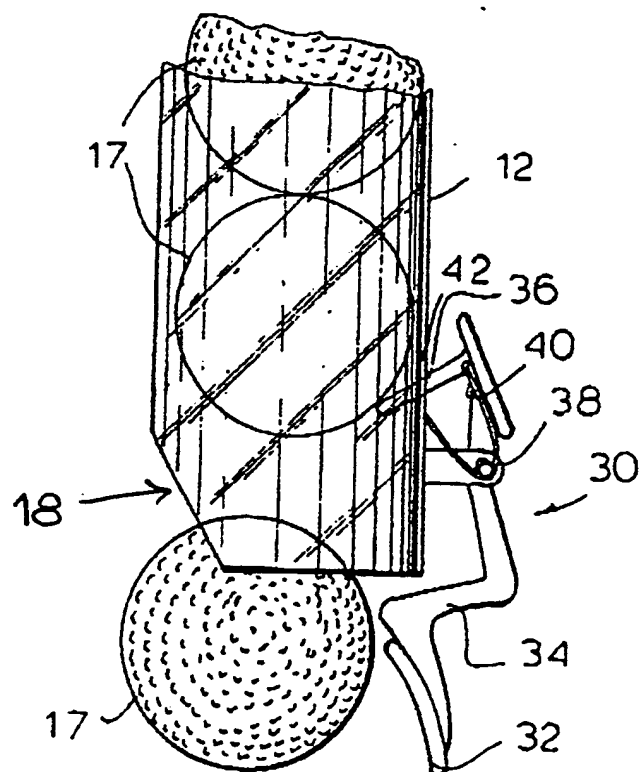
55



**Fig. 1**



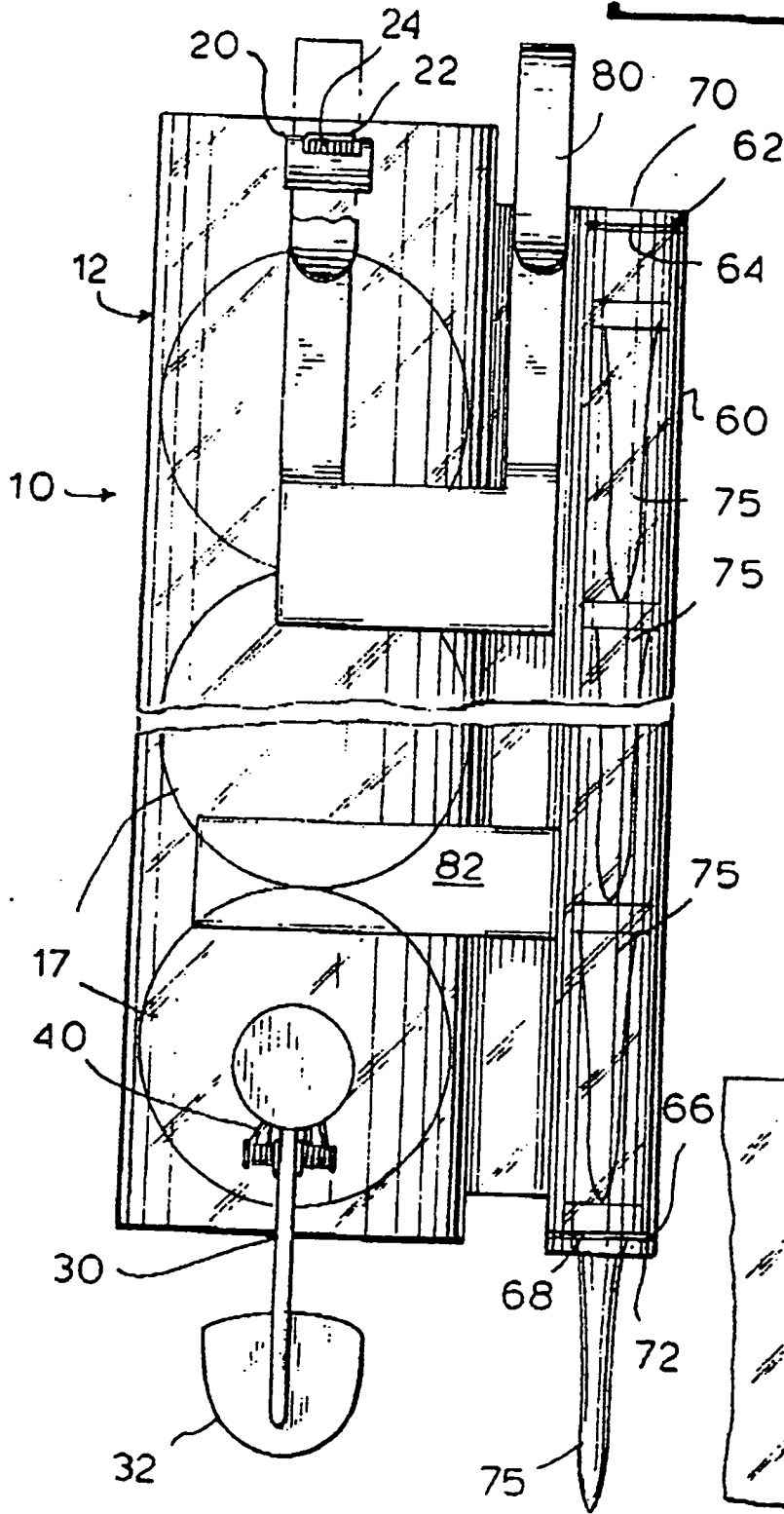
**Fig. 2**



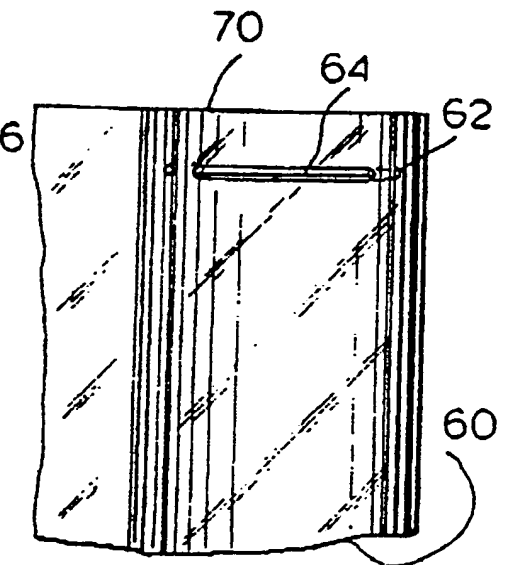
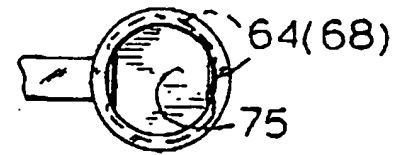
**Fig. 3**



**Fig. 4**



**Fig. 5**



**Fig. 6**

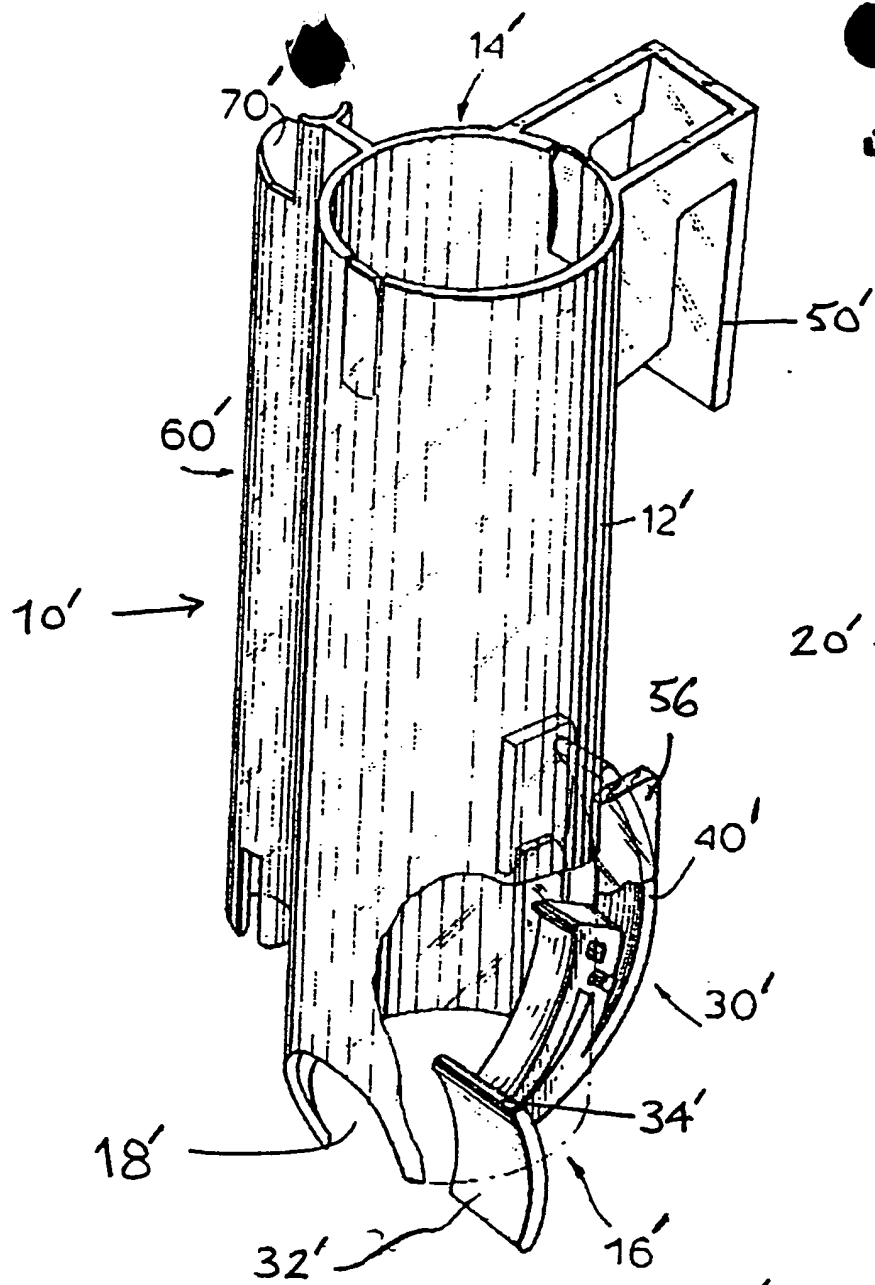


Fig. 7

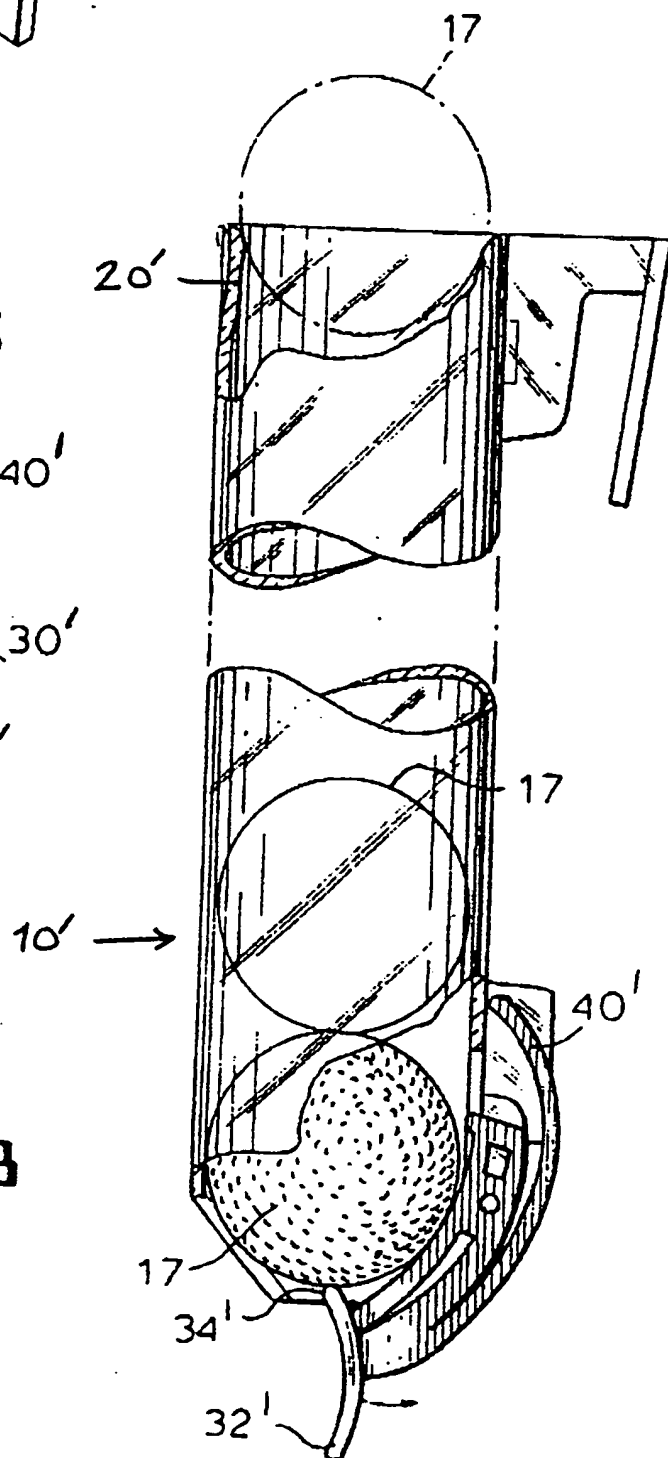
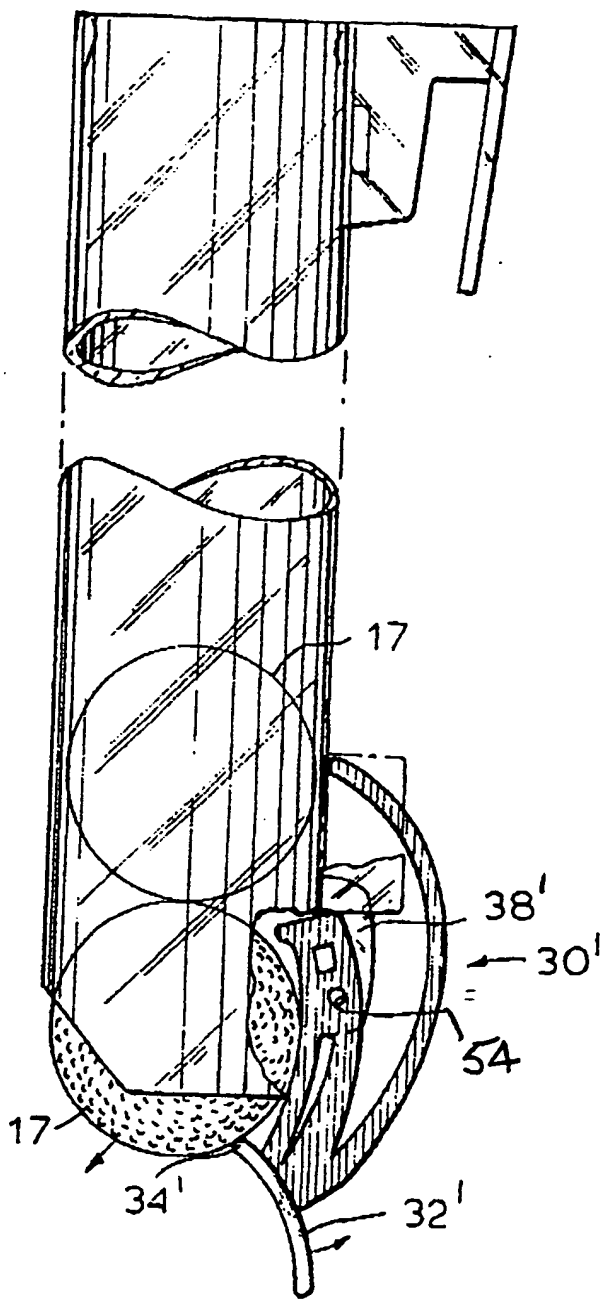


Fig. 8

**Fig 9**



**Fig 10**

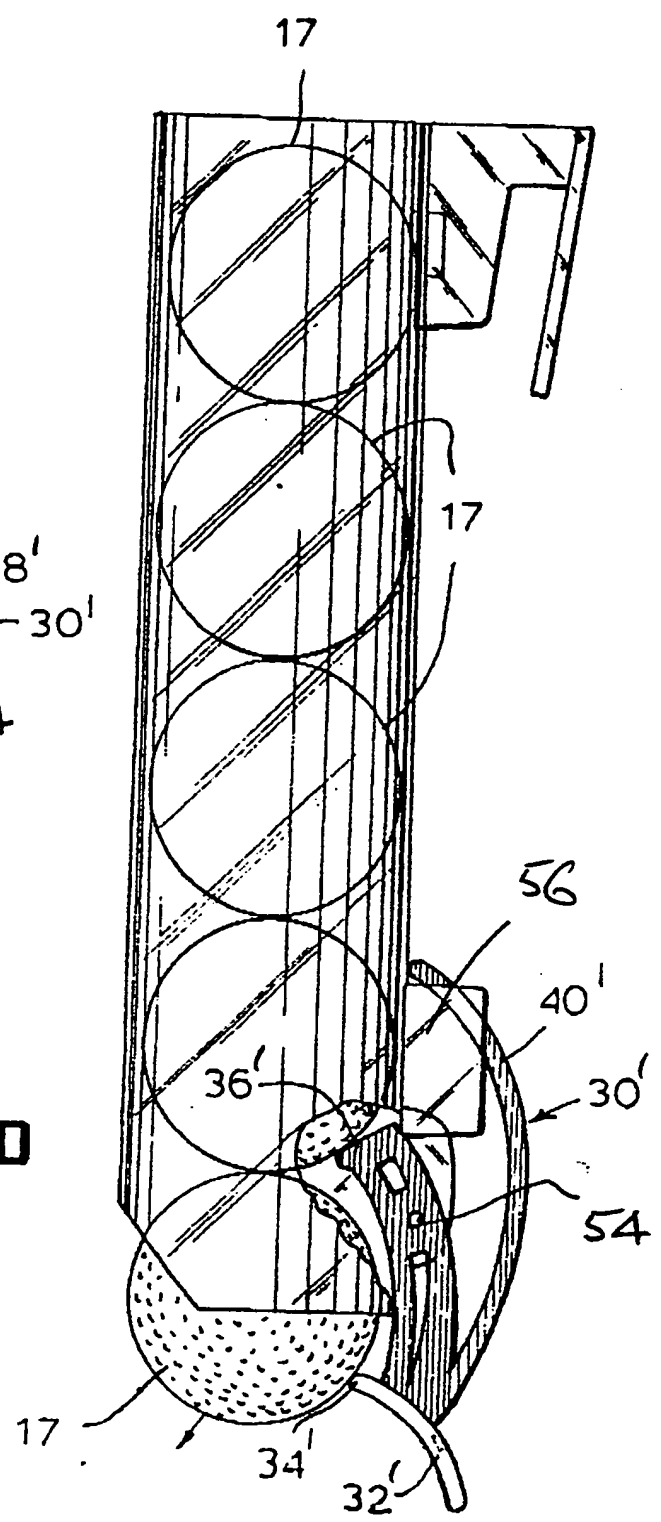


Fig. 1

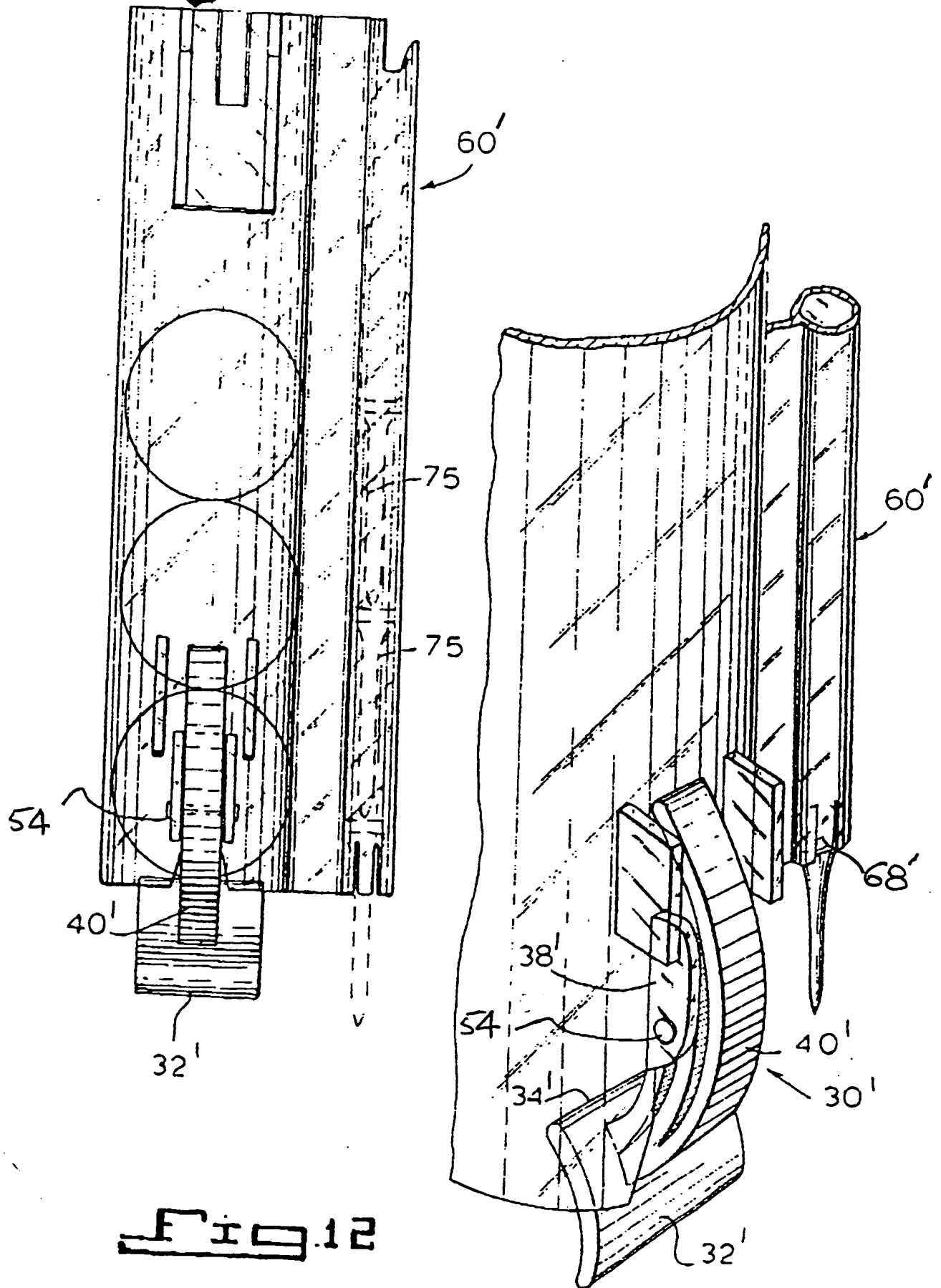


Fig. 12

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ **BLACK BORDERS**
- ☒ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☒ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☒ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**